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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LUU, THANH X

ART UNIT PAPER NUMBER

2878

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/478,372

Applicant(s)

NAKAMURA, KENJI

Examiner

Thanh X Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 21, 2003 has been entered.

Drawings

2. Figures 15-19 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "position D" mentioned on page 10 is not shown in Figure 4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 6-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Hasegawa et al. (U.S. Patent 5,715,043).

Regarding claims 6-10, Hasegawa et al. disclose (see Figures 17-21) an image sensing device comprising: a first optical system (lens 1L; see Figure 2) for forming a first object image (15L, 16L); a first area sensor (4L_α, 4L_β) having sensing elements disposed two-dimensionally arranged in the approximate image forming plane of the first optical system for receiving light of the first object image; a second optical system (lens 1R; see Figure 2) for forming a second object image (15R, 16R); a second area sensor (4R_α and 4R_β) having sensing elements disposed two-dimensionally arranged in the approximate image forming plane of the second optical system for receiving the light of the second object image; a signal reader for reading a first photoreception signal group from the first area sensor, a second photoreception signal group from the second area sensor and a third photoreception signal group from the second area sensor (see Figure 20); a position detector (40_α, 40_β) for detecting a first image interval (phase difference) based upon the second photoreception signal group and the first photoreception signal group and for detecting a image interval based upon the third photoreception signal group and the first photoreception signal group; and an angle

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detector (see Figure 21, step S14 and column 15, lines 15-25 and column 24, lines 39-42) for detecting a magnitude of an angle of the second object image relative to an axis of the second area sensor based on the detected image intervals. Hasegawa et al. further disclose (see Figure 20) the second and third photoreception signal groups include reception signals from a same part of the second area sensor ($4R_{\alpha}$ and $4R_{\beta}$). Hasegawa et al. also disclose (see Figure 20) calculating an object distance (45) based on a distance between object images formed on the first and second area sensors. Hasegawa et al. further disclose (see Figure 24) correcting for distance errors between object images as claimed.

Regarding claims 11-14, Hasegawa et al. disclose (see Figures 2, 17-21) an image sensing device, comprising: an optical system (1L or 1R; see Figure 2) having a single optical axis for forming an object image; a first sensor array ($4L_{\alpha}$ or $4R_{\alpha}$) arranged in the approximate image forming plane of the optical system for receiving the light of the object image; a second sensor array ($4L_{\beta}$ or $4R_{\beta}$) arranged in the approximate image forming plane of the optical system for receiving the light of the object image; a signal reader (see Figure 20; 40_{α} and 40_{β}) for reading a first photoreception signal series from the first sensor array and a second photoreception signal series from the second sensor array; a position detector (42) for detecting an image interval (phase difference) based upon the second photoreception signal series and the first photoreception signal series; and an angle detector (see Figure 21, step S14 and column 15, lines 15-25 and column 24, lines 39-42) for detecting a magnitude of an angle of the object image relative to an axis of one of the sensor arrays based on the

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detected image interval. The angle is inherently based on relative positional relationship of the sensor arrays since the angle is measured relative to the arrays. Hasegawa et al. further disclose (see Figure 17) the second sensor array is parallel to the first sensor array and the image sensing device is used in a distance measuring (see Figure 20) device.

Regarding claims 15-17, Hasegawa et al. disclose (see Figures 2 and 17-21) an image sensing device, comprising: an optical system (1) for forming an object image; an area sensor ($4L_{\alpha}$, $4L_{\beta}$ and $4R_{\alpha}$, $4R_{\beta}$) having sensing elements disposed two-dimensionally arranged in the approximate image forming plane of the optical system for receiving the light of the object image; a signal reader (see Figure 20; wires from the sensors to the phase difference detector circuits) reading a first photoreception signal group from the area sensor and a second photoreception signal group from the area sensor; a position detector (40_{α} and 40_{β}) for detecting an image interval based upon the second photoreception signal group and the first photoreception signal group; and an angle detector (see Figure 21, step S14 and column 15, lines 15-25 and column 24, lines 39-42) for detecting a magnitude of an angle of the object relative to the an axis of the area sensor based on the detected Image interval. The angle is inherently based on relative positional relationship of the area sensor since the angle is measured relative to the sensor. Hasegawa et al. further disclose (see Figure 13) the image sensing device is used in a distance measuring device.

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Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al.

Regarding claim 18, Hasegawa et al. disclose the claimed invention as set forth above. Hasegawa et al. do not specifically disclose the image interval is determined by calculating a correlation coefficient of luminance distribution as claimed. However, Hasegawa et al. teach (see Figures 38A and 38B) it is conventional to calculate correlation coefficients (correlation factors) of luminance distribution in determining an image interval. Thus, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide such a calculation in the apparatus of Hasegawa et al. to improve accuracy in detection.

Response to Arguments

8. Applicant's arguments filed January 21, 2003 have been fully considered but they are not persuasive.

Applicant asserts that the prior art does not disclose image sensors disposed two-dimensionally. Examiner has changed the rejection to point to a different embodiment of Hasegawa et al. (see Figures 17-21) that disclose the use of image

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sensors disposed two-dimensionally as claimed. Thus, as set forth above, this rejection is proper.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh X. Luu whose telephone number is (703) 305-0539. The examiner can normally be reached on Monday-Friday from 6:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta, can be reached on (703) 308-4852. The fax phone number for the organization where the application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

txl
March 17, 2003


Thanh X. Luu
Patent Examiner